1: Jenness--5-6 (1913-16) 1922 Copper Eskimo
116, 128

"The series of reports of which this is Volume XII and the first complete volume to be issued, will give the narrative and scientific results of the Canadian Arctic Expedition, 1913-18. The expedition, under the command of Mr. Vilhjalmur Stefansson, was originally planned to remain in the field from 1913 to 1916 and many earlier publications refer to it as the Canadian Arctic Expedition, 1913-16. Although many members of the scientific staff were officers of the Geological Survey of the Department of Mines, the general direction of the expedition for administrative purposes was placed in the hands of the Department of the Naval Service.

As the expedition was planned to work in two comparatively distinct fields at some distance from each other, it was divided into two parties. The Northern Party, whose field was primarily the Beaufort sea and the Arctic archipelago, remained in the field from 1913 to 1918 under the immediate supervision of Mr. V. Stefansson. The work of the Southern Party was confined more particularly to the Arctic mainland and the adjacent islands, under the direction of Dr. R. M. Anderson, and returned in the autumn of 1916. General accounts of the work of the two main parties and subsidiary parties, rosters of the scientific staffs and a portion of their contributions to the results of the expedition have been given in summary reports to the Government and in popular narrative and will be summed up in the forthcoming Volume I of this series.

In order to have the scientific results of the expedition properly worked up, the spec-

imens distributed to specialists, and the reports adequately published, an Arctic Biological Committee was appointed jointly by the Department of the Naval Service and the Department of Mines in January, 1917. This committee consisted of Chairman, Professor E. E. Prince, F.R.S.C., D. Sc., Dominion Commissioner of Fisheries; Secretary, James M. Macoun, C.M.G., F.L.S., Botanist and Chief of the Biological Division of the Geological Survey; Professor A.B. Macallum, F.R.S., M.D., D. Sc., Ph.D., LL.D., Chairman of the Commission for Scientific and Industrial Research (later professor of bio-chemistry at McGill University); C. Gordon Hewitt, D.Sc., Dominion Entomologist and Consulting Zoologist of the Department of Agriculture; and R.M. Anderson. Ph.D., Zoologist of the Geological Survey, representing the expedition and the Victoria Memorial Museum, the final depository of the specimens collected by the expedition. Various members of the committee took up the editing of different sections, and Dr. R.M. Anderson was appointed general editor of the reports.

The Committee has been at work for nearly five years and reports have been prepared or are in preparation by seventy-three specialists. Dr. Hewitt had fortunately practically completed his work on Volume III (Insects) before his untimely death on February 29, 1920, but Mr. Macoun had not finished his work on the botanical volumes at the time of his death on January 6, 1920. The scope of the committee was later enlarged to include the geographical, topographical, and anthropological work of the expedition and

three new members were added in 1920, namely A. G. Huntsman, Ph. D., of the Biological Board of Canada; Edward Sapir, Ph. D., Chief of the Division of Anthropology, Victoria Memorial Museum; and M. O. Malte, Ph. D., Dominion Agrostologist and Honorary Curator (later Chief Botanist) of the National Herbarium.

For convenience in publication and distribution it was arranged that the Department of the Naval Service should issue Volumes I (Narrative of the Expedition), VI, VII, VIII, IX, and X (Marine Biology and Hydrography), and XII (The Life of the Copper Eskimos), while the Department of Mines [6] should issue Volumes II (Birds and Mammals), III (Insects), IV and V (Botany) XI (Geology and Geography), XIII, XIV, and XV (Ethnology), and XVI (Archaeology.) Where several different reports are included under one volume, dated separates are issued for distribution to specialists interested in the particular branch covered, and copies are preserved to be bound in the complete series of volumes.

The author of the present memoir, Mr. D. Jenness, M.A. (Oxon.), F.R.A.I., Associate Ethnologist, Victoria Memorial Museum, after graduating from the University of New Zealand in 1908, was a student of anthropology in Balliol College, Oxford University. From 1911 to December, 1912, he was sent by Oxford University as a Research Student to New Guinea, and part of his work there has appeared in a volume entitled "The Northern D'Entrecasteaux," by D. Jenness and A. Ballantyne, Oxford University Press, 1920. After returning from the Arctic Mr. Jenness was on overseas

service, with the Canadian Field Artillery from 1917 to 1919, which fact accounts in some degree for the delay in publication of this report.

Arctic Publications Committee."

"I am indebted also to the Rev. H. Girling for many friendly criticisms, and for additional information that he has acquired since we left the Arctic. Mr. Girling has spent four years among the Copper Eskimos, from 1915-19, and during that period he has accomplished a great deal of valuable linguistic work. His long residence in the country, and his special gift for acquiring languages, have made him the foremost authority on many matters pertaining to the Copper Eskimos. (1)

The maps and illustrations for the present volume, apart from the photographs, were prepared by O. E. Prud'homme, artist of the Geological Survey.

In this, the first of the ethnological reports, and the only one that is likely to interest the general public, the simplest spelling possible has been adopted for all Eskimo words,

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"1. The Rev. H. Girling died of pneumonia at Ottawa on Feb. 21, 1920, while he was south on furlough. He was a man of considerable culture and attainments, with large views and larger sympathies. In all practical matters he was exceedingly capable and energetic, while his strong winning personality gained him a great influence over all the natives among whom he worked. He was planning to carry out some ethnological work for the Geological Survey on his return to the Arctic, but his sudden death when only 30 years of age put an untimely end to his career."

in order to make the book more readable. Most, if not all, of these words will be found in one of the later volumes that it is hoped to publish, where a more accurate phonetic system will be employed. These later volumes will deal with the more technical phases of Copper Eskimo ethnology, the physical appearance of the natives, their clothing and implements, their language, mythology and songs. The expedition brought back a large collection of phonographic records, photographs, and ethnological specimens, many of which will be utilized in illustrating the different memoirs.

The main sources of information for all that relates to the ethnology of the Copper Eskimos are the works of Mr. V. Stefansson, the commander of the Canadian Arctic Expedition. Mr. Stefansson obtained an astonishing amount of very valuable information in a comparatively short space of time, and while it was inevitable that a certain number of errors should have crept into his accounts, yet his works will always stand as the basis on which future investigators will have to build. His publications, together with the other works that have been consulted, are given in the bibliography; most of these works are quoted in abbreviated form in the course of the report."

9: Seltzer--344-346
116, 128, 141

(no date) 1933

Copper Eskimo-1-2

"Up to this point, I have presented the summary of the measurements of the six Eskimo groups without attempting to demonstrate the relationships existent between them. Now it is my purpose, by means of statistical devices, to detect the differences and similarities between the groups and to show their statistical significance beyond a reasonable doubt.

Accordingly, I have calculated the differences between the means of the various groups and the probable errors of these differences. And finally their relationship was expressed in terms of 'xpe,' obtained by dividing the differences between means by the probable errors of the differences.

In the following tables, I have used this statistical method to compare one Eskimo group with another. There are differences between every group, but now it is possible to demonstrate which differences are significant beyond a reasonable doubt, and which ones are merely different due to random sampling.

The first column of every table contains the means and probable errors of the main group subject to comparison. The rest of the groups [p. 345 contains a chart] [346] have two columns, the first giving the differences between means for each measurement, and at the base of which I have computed the average of the differences irrespective of signs; the second column headed by 'xpe' gives the number of times the difference exceeds the probable error of the difference.

All differences that have xpe's over 3.00 are unquestionably significant differences

and are printed in bold faced type, for the chances are more than 96 out of 100 that such differences are not due to random sampling. Those differences that are between 2 and 3 times their own probable errors, whose chances of being significant are from 82 to 96 out of 100, may be said to be possibly or probably significant and are printed in italics. All differences having an xpe less than 2.00 are considered to be differences due merely to the random sampling process."

12: Collinson--286 (1851-53) 1889 Copper Eskimo
116, 103, 177, 128, 412

"Mr. Arbuthnot succeeded in inducing some of them to draw a chart of the coast to the eastward, which was several times repeated, agreeing very well with each other, but were totally unlike the coast afterwards travelled over by me. He also appeared to think they indicated a ship being there; but in my opinion it was a repetition of his question. They appeared to know the woman Kablalla mentioned by Sir James Ross, but had no knowledge of Oogeolik. But little or no iron was found amongst them, needles, knives, and fish-hooks being made of copper; an occasional iron or even a brass tip was seen on the arrows, and the few and well-worn beads on their persons showed that this was in all probability the first time they had come in contact with white men."

[P.14,9]

SAMPLES, SERA AND METHODS

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Samples were collected at Cambridge Bay, Holman Island, Reid Island and Coppermine in April, 1958 and the tests carried out at the Hudson's Bay Company post at Coppermine. With the exception of the specimens from Cambridge Bay (which were venous samples obtained for us by Dr. Gillison of the Department of National Health, sent by air to Coppermine and tested on the third day) all samples were of capillary blood taken into saline and tested on the day of collection.

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The test sera had all been in use in our laboratory for some time so that their specificity and mode of action were well known. We had taken test cells of various known antigen constitution with us; these were used daily to control the results. Five methods were used according to the mode of action of the various sera; agglutination in a capillary tube by untreated serum (Chown and Lewis, '51) indicated below by "capillary;" agglutination in a capillary tube by serum mixed with activated papain (Lewis et al., '58) indicated below by "capillary papain;" the indirect Coombs technique of Race and Sanger ('58) modified to the extent that the final agglutination with anti-human-globulin rabbit serum (Coombs' reagent) was carried out in a capillary tube, indicated by "indirect Coombs;" agglutination in bovine albumin (Lewis and Chown, '57), indicated below by "short albumin;" open well slide, so stated below. In the following the serum is described first; the method is given after the semicolon. The letters in brackets are our code names for the particular serum used. Unless otherwise indicated tests were made at room temperature which varied from 18° to 22°C.

The ABO system. One each, high titre, avid anti-A and anti-B and one anti-A + B from O donor; capillary. One commercial anti-A_1 (absorbed B); open well slide.

The MNSs system. One commercial anti-M; capillary. One commercial anti-N; open well slide. One anti-S (Dev), one anti-s (Chei); capillary. One anti-M^g (UB no. 4), one anti-M^g (HA1); capillary. One anti-Vw(Gill); short albumin. One anti-He (Sha); open well slide.

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The P system. One anti-P (Wil); capillary at refrigerator temperature. One anti-Tj^a (Ell); capillary.

The Rh system. One each anti-C + C^w (comm.), anti-C^w (Bosh), anti-D (Faw); capillary. One each anti-c (Tod), anti-E (McL), anti-e (Hal); capillary papain. A further anti-c (Gal), anti-E (Ros), and anti-e (Sha) for those samples reacting as CcDee or ccDEe; capillary papain. (In every case the reaction with the check serum agreed with the reaction obtained with the primary test serum.) One anti-V (Ros); indirect Coombs.

The Lutheran system. One each anti-Lu^a (TG) and anti-Lu^b (TG); capillary.

The Kell system. One each anti-K (Nas), anti-k (Ort); capillary papain. One each anti-Kp^a (97B) and anti-Kp^b + K (Raut); indirect Coombs.

The Duffy system. One anti-Fy^a (Rig) and one anti-Fy^b (Mul); indirect Coombs.

The Lewis system. One anti-Le^a (Mou); capillary.

Other systems. One anti-Wr^a (She); capillary at 37°. One each anti-Di^a (Woj), anti-Be^a, anti-By^a, anti-Yt^a (Cart); indirect Coombs.

Secretor status. Saliva samples were diluted one part to one part of saline, heated in a boiling water bath for 10 minutes, centrifuged and the supernatant tested, all of groups A, B and AB being tested for inhibition of anti-A, anti-B and anti-H; all of group O for inhibition of anti-H (Ulex). There were no discrepancies as between inhibition of anti-A or B and anti-H, while, since all proved to be secretors, the inhibition tests served to confirm the blood grouping.

RESULTS

The results are set out in table 1 to 9. The gene frequencies for the MN, Ss and Rh groups were determined by gene count, the others by square root methods or, as in the case of MNSs, by a combination. Those of group O who were P-negative were tested with anti-Tj^a and were positive. Hence, in that system, the frequencies are based on an assumed absence of *p*. Other than this the tables are self-explanatory.

27:Chown & Lewis D-5 (1958) 1959 ND8 Copper Eskimo ND8
[P.15]

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TABLE 1
The ABO system

Phenotype	Number	Frequency observed	Frequency expected	Number expected	Gene frequencies
O	146	0.4563	0.4583	146.66	
A_1	153	0.4781	0.4794	153.41	O 0.6770
B	14	0.0437	0.0438	14.02	A_1 0.2914
A_1B	7	0.0219	0.0184	5.89	B 0.0316
Totals	320	1.0000	0.9999	319.98	1.0000

TABLE 2
The MN system

Genotype	Number	Frequency observed	Frequency expected	Number expected	Gene frequencies
MM	221	0.6906	0.7092	226.94	
MN	97	0.3031	0.2859	85.09	M 0.8422
NN	2	0.0063	0.0249	7.97	N 0.1578
Totals	320	1.0000	1.0000	320.00	1.0000

TABLE 3
The Ss system

Genotype	Number	Frequency observed	Frequency expected	Number expected	Gene frequencies
SS	14	0.0437	0.0334	10.69	S 0.1827
Ss	89	0.2781	0.2987	95.58	s 0.1873
ss	217	0.6782	0.6679	213.73	
Totals	320	1.0000	1.0000	320.00	1.0000

TABLE 4
The MNSs system

Phenotype	Number observed	Frequency observed	Frequency expected	Number expected	Gene frequencies
MMSS	14	0.0437	0.0295	9.44	
MMSs	67	0.2094	0.2304	73.73	MS 0.1719
MMss	140	0.4375	0.4493	143.78	Ms 0.6703
MNSS	0	0.0000	0.0000	0.00	NS 0.0000
MNSs	22	0.0687	0.0543	17.38	Ns 0.1578
MNss	75	0.2344	0.2116	67.71	
NNSS	0	0.0000	0.0000	0.00	
NNSs	0	0.0000	0.0000	0.00	
NNss	2	0.0063	0.0249	7.97	
Totals	320	1.0000	1.0000	320.01	1.0000

TABLE 5
The P system

Phenotype	Number	Frequency	Gene frequencies
P+	107	0.3344	P_1 0.1842
P–	213	0.6656	P_2 0.8158
Total	320	1.0000	1.0000

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TABLE 6

The Rh system

Phenotype	Number	Frequency observed	Frequency expected	Number expected	Gene frequencies
CCDee	81	0.2531	0.2485	79.53	
ccDEE	78	0.2437	0.2407	77.02	
CcDEe	154	0.4813	0.4891	156.51	CDe(± Cde) 0.4985
CcDee	3	0.0094	0.0109	3.49	cDE(± cdE) 0.4906
ccDEe	4	0.0125	0.0106	3.39	cDe(± cde) 0.0109
ccddee ccDee	0	0.0000	0.0001	0.03	
Totals	320	1.0000	0.9999	319.96	1.0000

TABLE 7

The Duffy system

Phenotype	Number	Frequency	Gene frequencies
Fy(a+)	300	0.9375	Fy^a 0.7500
Fy(a−)	20	0.0625	Fy^b 0.2500
Totals	320	1.0000	1.0000

TABLE 8

Other systems

System	Phenotype	Number tested	Frequency
Lutheran	Lu(a−b+)	146	1.00
Kell	K−k+Kp(a−b+)	320	1.00
Lewis	Le(a−)	299	1.00
Secretor	Secretor of appropriate A, B, or (and) H substance	200	1.00
	Yt(a+)	146	1.00

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TABLE 8
Antigens apparently lacking (i.e., not demonstrated)

System	Antigen	Number tested (all negative)
MNSs	He	320
	M^g	320
	Mi^a	320
	Vw	148
Rh	C^w	320
	V	320
Diego	Di^a	320
Berens	Be^a	88
Batty	By^a	299
Wright	Wr^a	299

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DISCUSSION

The gene frequencies of this population are in some ways similar to, and in others

[P.17, B]

may well be in the present Eskimo population a Dorset residuum which is genetically recognizable. It is hardly to be expected that such recognition will depend upon the presence of a strange gene in one population that is absent from the other, but rather upon differences of frequencies of genes already known or to be discovered, differences such as are indicated in the above data. One can as yet draw no firm conclusions, but certainly the indications are enough to make further genetic studies, even more complete than the present one, worth-while.

SUMMARY

Blood group gene frequencies were determined based on samples from 320 Copper Eskimo as follows: *O*, 0.6770; *A*, 0.2914; *B*, 0.0316; *M*, 0.8422; *N*, 0.1578; *S*, 0.1827; *s*, 0.8173; *MS*, 0.1719; *Ms*, 0.6703, *NS*, 0.0000, *Ns*, 0.1578; P_1, 0.1842, P_2, 0.8158; *CDe*(±*Cde*), 0.4985; *cDE*(±*cdE*), 0.4906; *cDe*(±cde), 0.0109; Fy^a, 0.7500; Fy^b, 0.2500. The following phenotypes were found to have a frequency of 1.00; Lu (a − b +), K − k + Kp(a − b +), Le(a−) and Sec. The following antigens were not present in the population tested: He, M^g, Mi^a, Vw, C^w, V, Di^a, Be^a, By^a, and Wr^a. Differences between this population and other Eskimo populations studied were noted in the ABO, MNSs and Duffy systems.

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ADDENDUM

Since this article was written we have obtained additional genealogical information from Mr. Wm. Joss, Manager of the

These specimens, and random field-notes made during the course of the expedition, provide the foundation for the following report. It has been written at odd times during the last 25 years, but was so nearly complete by 1932, when the late Knud Rasmussen published his splendid "Intellectual Culture of the Copper Eskimos" (Reports of the Fifth Thule Expedition, 1921-1924, vol. IX, Copenhagen, 1932), that it seemed advisable to let it stand without any change or revision; consequently, the reader will find no references to Rasmussen's work.

In this volume the series of "Reports of the Canadian Arctic Expedition, 1913-18", reaches its conclusion. There will be no archæological paper, as originally planned, describing the Eskimo ruins on Barter Island.

I am indebted to Miss W. K. Bentley and Mr. O. E. Prudhomme for all the drawings in this volume except those in colour, which were made in the field during the winter of 1915-16 by the late Rev. H. Girling, the first Anglican missionary to visit the Copper Eskimo.